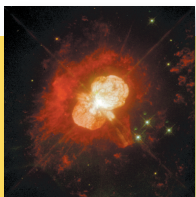


Living With a Star

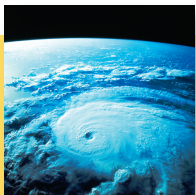
LWS is a cross-cutting program whose goals and objectives have the following links to each of the four NASA Strategic Enterprises:

1 Space Sciences



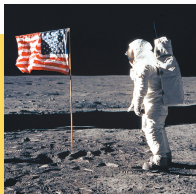
LWS quantifies the physics, dynamics, and behavior of the only stellar/planetary system we can see at a close distance.

2 Earth Sciences



LWS improves understanding of the effects of solar variability and disturbances on terrestrial climate changes.

3 Human Space Flight



LWS provides data necessary for advanced warning of solar energetic particle showers that affect the safety of humans in space.

4 Aeronautics and Space Transportation



LWS provides information useful in the design of more reliable electronics for air and space transportation systems.



Visit Us on the Web:

- Living With a Star:
<http://lws.gsfc.nasa.gov>

For More Information, See:

- Sun-Earth Connection:
<http://sec.gsfc.nasa.gov>
- International Living With Star:
<http://ilws.gsfc.nasa.gov>
- LWS Science:
<http://lws-science.gsfc.nasa.gov>
- Solar Dynamics Observatory:
<http://sdo.gsfc.nasa.gov>
- LWS Targeted Research and Technology:
<http://lws-trt.gsfc.nasa.gov>
- LWS Space Environment Testbeds:
<http://lws-set.gsfc.nasa.gov/>
- Solar Terrestrial Probes:
<http://stp.gsfc.nasa.gov/>



Goddard Space Flight Center
is the implementing NASA Center for the SEC Division

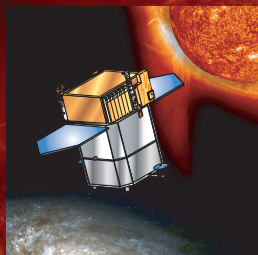
NP-2000-4-043-GSFC Rev 7/03

Living With a Star

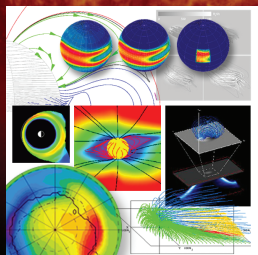


★ Program Elements

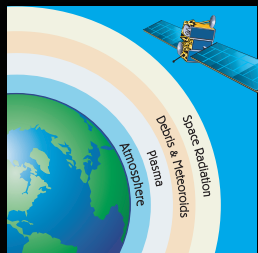
- A Space Weather Research Network
- Targeted Research and Technology
- Space Environment Testbeds



Science Missions



Targeted Research and Technology



Space Environment Testbeds

Living With a Star (LWS) is a NASA program that will address aspects of the Sun-Earth system that affect life and society. LWS is a part of the Sun-Earth Connection (SEC) Division within the Office of Space Science.

Effects of Solar Variability:

Aeronautics:

- High altitude aircraft exposure to radiation, especially near the Poles
- Navigational and GPS interference

Astronautics:

- Threat of sporadic radiation to astronauts
- Potential damage to spacecraft electronics

National Defense:

- Disrupted satellite operations
- Interrupted communications

Science:

- Understand how the Sun works
- Understand how the Sun interacts with the Earth system

Technology Infrastructure:

- Disruption/failure of communication satellites
- Power grid distribution problems/equipment failure

Climate Change:

- Global temperature variations
- Predictive capability for climatic changes

Targeted Research and Technology:

- The TR&T Program is the research engine that integrates scientific output, data, and models from LWS and other providers to generate an integrated, systemwide picture of Sun-Earth connected science with social relevance.

Space Environment Testbeds:

- The SET Program goal is to improve the capability to accommodate or mitigate the effects of solar variability on spacecraft and instrument design and operations.

The Sphere of the Human Environment Continues to Expand Above and Beyond the Planet... ★

Missions:

Solar Dynamics Observatory

The first mission to view the entire domain of the Sun where magnetic fields originate and cause the variations that affect life and society.

Geospace Storm Probes

Radiation Belt Storm Probes

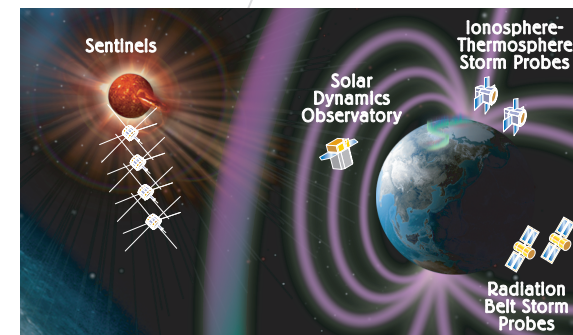
Characterize and understand acceleration, global distribution, and variability of the radiation belt electrons and ions that produce harsh environments for spacecraft and humans.

Ionosphere-Thermosphere Storm Probes

Characterize and understand mid-latitude ionospheric variability and irregularities that affect communications, navigation, and radar systems.

Sentinels

Discover, understand, and model the connection between solar phenomena and geospace disturbances using inner heliospheric observations.



The Sun/Earth system with the LWS missions